

# 3EQ Composite Housed Surge Arresters

**Saving Money and Space, Gaining Reliability**

Power Transmission and Distribution

**SIEMENS**

# A perfect Combination of Cost-Savings, Safety and Reliability

## 3EQ Surge Arresters:

### Your Reliable, Sturdy and Economic Choice

3EQ surge arresters are virtually indestructible. While their tube design provides the highest possible mechanical strength and enables them to support high bending moments, the silicone rubber insulation is ideal for outdoor applications in severe environmental conditions. No matter how tough the environmental or operating conditions may be, our 3EQ arresters assures a 100 % reliable pressure relief performance, they provide the ultimate in protection. They are break-proof and retain at least 75 % of their mechanical strength even after pressure relief. They provide the greatest stability, even in earthquakes.

### Reduced Space Requirements

Their advantages are more than convincing, a perfect combination of cost-savings and safety for your substations. The combination of silicone rubber and fiber-glass-reinforced tube imparts enormous load carrying capacity to the structure. Thus, our 3EQ surge arresters are the perfect choice to replace existing post insulators in your substations up to voltages of 800 kV. Where space is most essential, 3EQ surge arresters can even be mounted over the transformer to support connectors without any danger to neighboring equipment. This assures maximum

stability, even if the arresters should “blow out” after overload-ing. Pressure relief is absolutely reliable – there is no danger to equipments in the direct vicinity. Due to their unique tube design, no parts will be expelled, and the emerging arc will burn between the ends of the pressure relief device.

### Longevity and Reliability

The 3EQ's Silicone Rubber housings provide the best possible long-life-performance for high-voltage surge arresters. They make use of all the advantages of bonding vulcanized-on silicone rubber sheds to a fiberglass-reinforced plastic tube, providing enhanced safety and meeting every requirement. And, with their silicone rubber housings, the arresters enjoy all-round protection. The silicone rubber shield provides a reliable defense against snow, sandstorms, ozone, high-level UV radiation, sea salt, soot and acid rain in industrial regions. Only genuine silicone rubber is capable of maintaining its hydrophobic properties throughout its entire service life – and is resistant to UV radiation. The silicone rubber of the 3EQ surge arresters reliably prevents the formation of films of water or dirt. Surface currents resulting from conductive layers of accumulated dirt are eliminated.

## The cost-saving solution for your substation

You require fewer post insulators for your installation, thereby saving you both money and space.

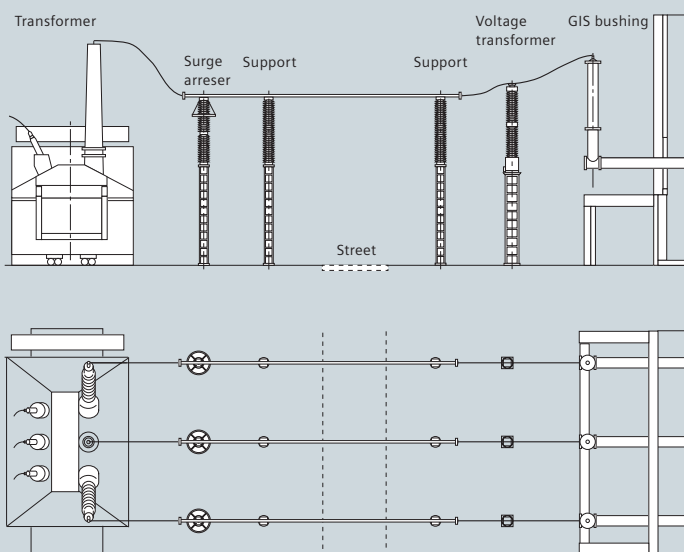


Diagram of substation prior to 3EQ modification

### Saved installment space

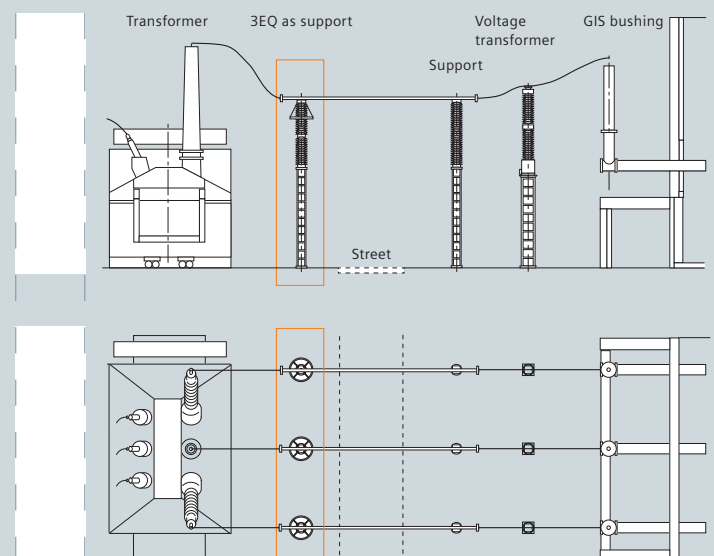


Diagram of substation with integrated 3EQ modification

### A lot more speaks for the efficiency of 3EQ

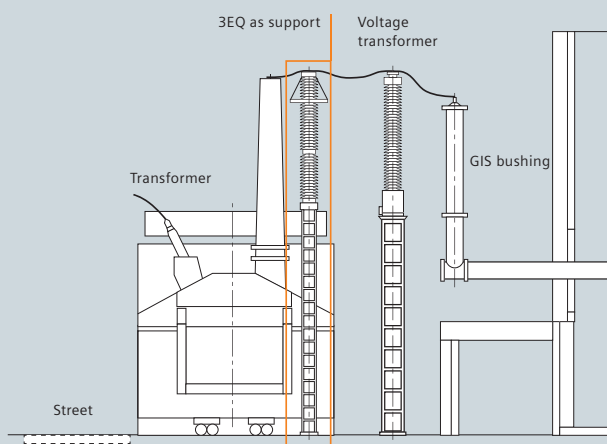
Their dramatically reduced weight means savings right from the start – in transportation, in support structures and in installation. The weight reduction in our polymeric arresters compared with porcelain types is amazing. In fact, highvoltage arresters with composite housings are about 50 % lighter than their porcelain counterparts. This makes all the difference: Initially in terms of transportation costs. Then there is installation and commissioning – involving reduced labor costs, less complex support structures and simple hoisting gear. The cranes required can be significantly smaller – and the cost using them correspondingly lower. And there's another way in which they save costs – polymeric arresters don't need cleaning. By virtue of its hydrophobic properties, everything is so much simpler with silicone rubber throughout its entire service life. They provide numerous advantages – a gain for everyone, thanks to Siemens know-how for innovations and unsurpassed quality of manufacture.

### All 3EQ advantages at a glance are

- Maximized service life
- 100 % break-proof – reliable overload performance, no hazardous splinters even under maximum pressure: these arresters can even be installed in close proximity to costly system components
- Safe from damage – unbreakable during transportation, installation, storms, earthquakes and immune to vandalism
- Outstanding stability in earthquake and storm: these arresters can be used to replace post insulators
- Use of silicone rubber – hydrophobic, resistant to pollution and to UV radiation
- Extremely rugged – reliable in any climate and polluted environment
- Substantially reduced weight – ease of installation with simple lifting gear
- Complete and wide product range, special versions to order
- Cost-effective in all respects – maximum availability – for many special application and installation needs

### Reduce the required space even more

It's no problem to install our 3EQ surge arrester on top of the transformer! There is no danger to equipment, even in the direct vicinity.



Clearance between equipment according to technical standards

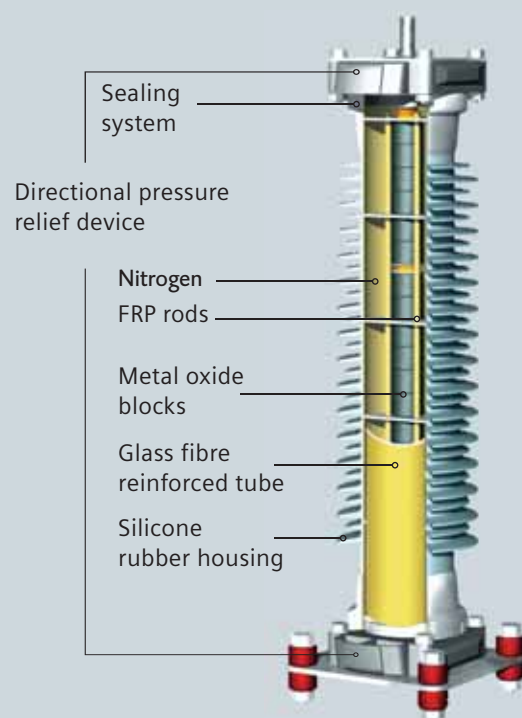


Diagram 1

### Choose the Appropriate Arrester

In just four steps you can choose the right surge arrester:

1. First step choose the type 3EQ1, 3EQ4 or 3EQ3 from diagram 1.
2. Second step verify the maximum technical data with table 1.
3. Third step choose the surge arrester with table 2.
4. Fourth step select the suitable installation and grounding and complete the order number with table 3.

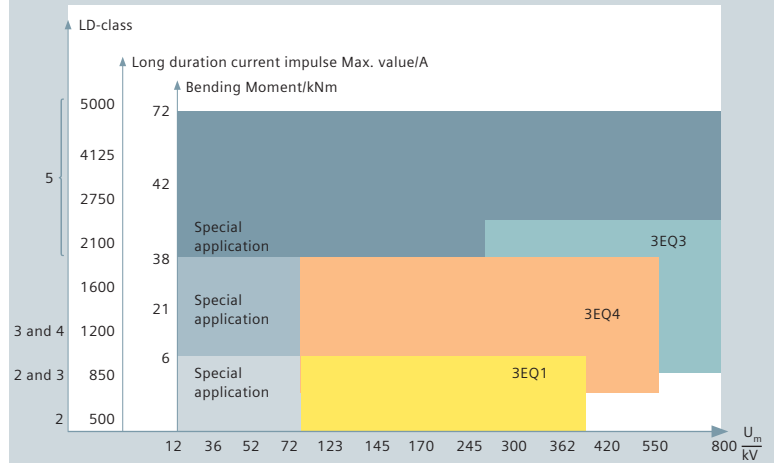


Table 2

Highest voltage for equipment	Standard lightning impulse withstand voltage	Rated voltage	Continuous operating voltage	Line discharge class	Long duration current 2 ms	Maximum values of the residual voltages at discharge currents of the following impulses						Arrester type									
$U_m$ [kV]	BIL min [kV]	$U_c$ [kV]	$U_c$ [kV]	LD-CI	[A]	8/20 $\mu$ s 5 kA [kV]	8/20 $\mu$ s 10 kA [kV]	8/20 $\mu$ s 20 kA [kV]	30/60 $\mu$ s 0.5 kA [kV]	30/60 $\mu$ s 1 kA [kV]	30/60 $\mu$ s 2 kA [kV]										
72.5	325	54	43	2	500	133	143	160	110	114	120	3EQ1	054	–	1	P	B	2	1	–	–
	325	54	43	3	850	122	130	144	104	106	111	3EQ1	054	–	2	P	B	3	1	–	–
	325	60	48	2	500	148	159	178	122	127	134	3EQ1	055	–	1	P	B	2	1	–	–
	325	60	48	2	850	130	138	153	110	113	119	3EQ1	056	–	2	P	B	2	1	–	–
	325	60	48	3	850	135	144	160	115	118	124	3EQ1	060	–	2	P	B	3	1	–	–
	325	66	53	2	500	163	175	196	135	140	147	3EQ1	066	–	1	P	B	2	1	–	–
	325	66	53	2	850	143	152	168	121	124	131	3EQ1	066	–	2	P	B	2	1	–	–
	325	66	53	3	850	149	158	176	127	130	136	3EQ1	066	–	2	P	B	3	1	–	–
	325	72	58	2	500	177	191	214	147	153	160	3EQ1	072	–	1	P	B	2	1	–	–
	325	72	58	3	850	162	173	192	138	142	149	3EQ1	072	–	2	P	B	3	1	–	–
Neutral-ground arresters $U_m$ [kV]																					
72.5	325	30	24	2	500	74.0	79.5	89.0	61.2	63.6	66.8	3EQ1	030	–	1	S	B	2	1	–	–
	325	30	24	3	850	67.7	72.0	79.9	57.6	59.0	61.9	3EQ1	030	–	2	S	B	3	1	–	–
123	450	96	77	2	500	237	254	285	196	204	214	3EQ1	096	–	1	P	J	2	1	–	–
	450	96	77	2	850	208	221	245	177	181	190	3EQ1	096	–	2	P	J	2	1	–	–
	450	96	77	3	850	217	230	256	184	189	198	3EQ1	096	–	2	P	J	3	1	–	–
	450	102	82	2	500	251	270	303	208	216	227	3EQ1	102	–	1	P	J	2	1	–	–
	450	102	82	3	850	230	245	272	196	201	211	3EQ1	102	–	2	P	J	3	1	–	–
	450	108	86	2	500	266	286	321	220	229	240	3EQ1	108	–	1	P	J	2	1	–	–
	450	108	86	3	850	244	259	288	207	213	223	3EQ1	108	–	2	P	P	3	1	–	–
	450	111	89	3	850	250	266	296	213	218	229	3EQ1	111	–	2	P	P	3	1	–	–
Neutral-ground arresters $U_m$ [kV]																					
123 Resonant earthed	450	51	41	2	500	126	135	151	104	108	114	3EQ1	051	–	1	S	B	2	1	–	–
	550	90	72	2	850	195	207	230	166	170	178	3EQ1	090	–	2	S	E	2	1	–	–
	550	96	77	2	850	208	221	245	177	181	190	3EQ1	096	–	2	S	J	2	1	–	–
145	550	111	89	2	500	274	294	329	227	235	247	3EQ1	111	–	1	P	J	2	1	–	–
	550	111	89	2	850	240	255	283	204	209	220	3EQ1	111	–	2	P	J	2	1	–	–
	550	120	96	2	500	296	318	356	245	254	267	3EQ1	120	–	1	P	P	2	1	–	–
	550	120	96	3	850	271	288	320	230	236	248	3EQ1	120	–	2	P	P	3	1	–	–
	550	126	101	3	850	284	302	336	242	248	260	3EQ1	126	–	2	P	P	3	1	–	–
	550	132	106	3	850	298	317	352	253	260	272	3EQ1	132	–	2	P	P	3	1	–	–
	550	144	115	2	850	311	331	368	265	272	285	3EQ1	144	–	2	P	P	2	1	–	–
	550	144	115	3	850	325	346	384	276	283	297	3EQ1	144	–	2	P	P	3	1	–	–
Neutral-ground arresters $U_m$ [kV]																					
170	650	60	48	2	500	148	159	178	122	127	134	3EQ1	060	–	1	S	B	2	1	–	–
	650	138	110	2	500	340	366	410	282	293	307	3EQ1	138	–	1	P	P	2	1	–	–
	650	138	110	2	850	298	317	352	254	260	273	3EQ1	138	–	2	P	P	2	1	–	–
	650	138	110	3	850	311	331	368	265	272	285	3EQ1	138	–	2	P	P	3	1	–	–
	650	144	115	2	500	355	382	427	294	305	321	3EQ1	144	–	1	P	P	2	1	–	–
	650	144	115	3	850	325	346	384	276	283	297	3EQ1	144	–	2	P	P	3	1	–	–
	650	144	115	3	850	325	346	384	276	283	297	3EQ1	144	–	2	P	P	3	1	–	–
	650	150	120	3	850	338	360	400	288	295	310	3EQ1	150	–	2	P	P	3	1	–	–
Neutral-ground arresters $U_m$ [kV]																					
170	650	69	55	2	500	170	183	205	141	146	154	3EQ1	069	–	1	S	B	2	1	–	–

1) According to IEC 60099-4 these values are measured on individual housing units

Table 1

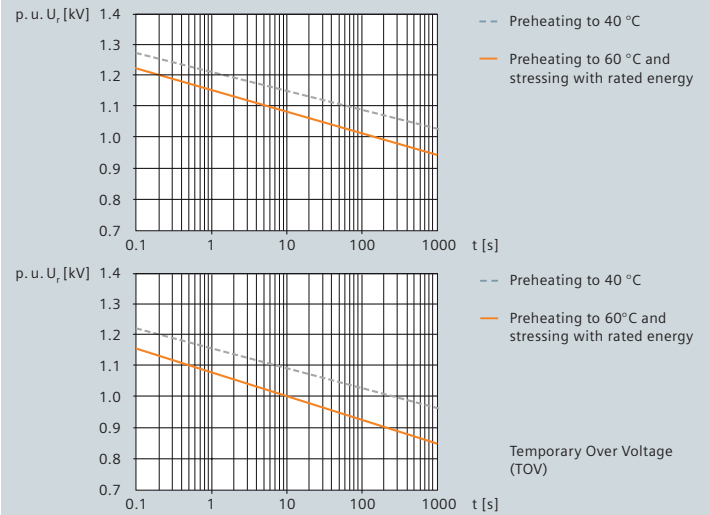
Maximum values		3EQ1	3EQ4	3EQ3
Nominal system voltage $U_n$	kV	345	500	765
Highest voltage for equipment $U_m$	kV	362	550	800
Maximum rated voltage $U_r$	kV	288	468	612
Maximum nominal discharge current $I_n$	kA	10	20	20
Maximum line discharge class		3	5	5
Maximum energy absorption capability	kJ/kVr	8	18	27
Maximum long duration current impuls	A	850	2100	5500
Rated short circuit current	kA	50	65	80
Maximum permissible service load	kNm	6	38	72

To find the right arrester just follow the color codes

3EQ1     3EQ4     3EQ3    

Diagram 2/Diagram 3:

Power-frequency voltage versus time characteristic



		Height [H]	Number of units	Housing insulation		Creepage distance	Top load dynamic	Grading ring diameter [D]	Weight	TOV Diagram	Figure
		[mm]		Lightning impulse withstand voltage 1.2/50 $\mu$ s <sup>1)</sup> [kV]	Power frequency withstand voltage 1 min., wet <sup>1)</sup> [kV]	[mm]	[N]	[mm]	[kg]		
4 xxx	885	885	1	348	162	2075	6800	–	25	2	11
4 xxx	885	885	1	348	162	2075	6800	–	27	2	11
4 xxx	885	885	1	348	162	2075	6800	–	25	2	11
4 xxx	885	885	1	348	162	2075	6800	–	27	3	11
4 xxx	885	885	1	348	162	2075	6800	–	27	2	11
4 xxx	885	885	1	348	162	2075	6800	–	26	2	11
4 xxx	885	885	1	348	162	2075	6800	–	28	3	11
4 xxx	885	885	1	348	162	2075	6800	–	28	2	11
4 xxx	885	885	1	348	162	2075	6800	–	26	2	11
4 xxx	885	885	1	348	162	2075	6800	–	29	2	11
4 xxx	885	885	1	348	162	2075	6800	–	23	2	11
4 xxx	885	885	1	348	162	2075	6800	–	24	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	32	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	35	3	11
4 xxx	1235	1235	1	551	257	3390	4900	–	36	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	33	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	37	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	33	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	38	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	38	2	11
4 xxx	885	885	1	348	162	2075	6800	–	25	2	11
4 xxx	1035	1035	1	435	203	2635	5800	–	33	3	11
4 xxx	1235	1235	1	551	257	3390	4900	–	33	3	11
4 xxx	1235	1235	1	551	257	3390	4900	–	68	2	11
4 xxx	1235	1235	1	551	257	3390	4900	–	71	3	11
4 xxx	1485	1485	1	696	324	4330	4000	–	72	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	76	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	77	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	78	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	79	3	11
4 xxx	1485	1485	1	696	324	4330	4000	–	79	2	11
4 xxx	1050	1050	1	484	334	2490	5700	–	26	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	39	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	44	3	11
4 xxx	1485	1485	1	696	324	4330	4000	–	45	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	39	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	45	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	45	2	11
4 xxx	1485	1485	1	696	324	4330	4000	–	46	2	11
4 xxx	885	885	1	348	162	2075	6800	–	26	2	11

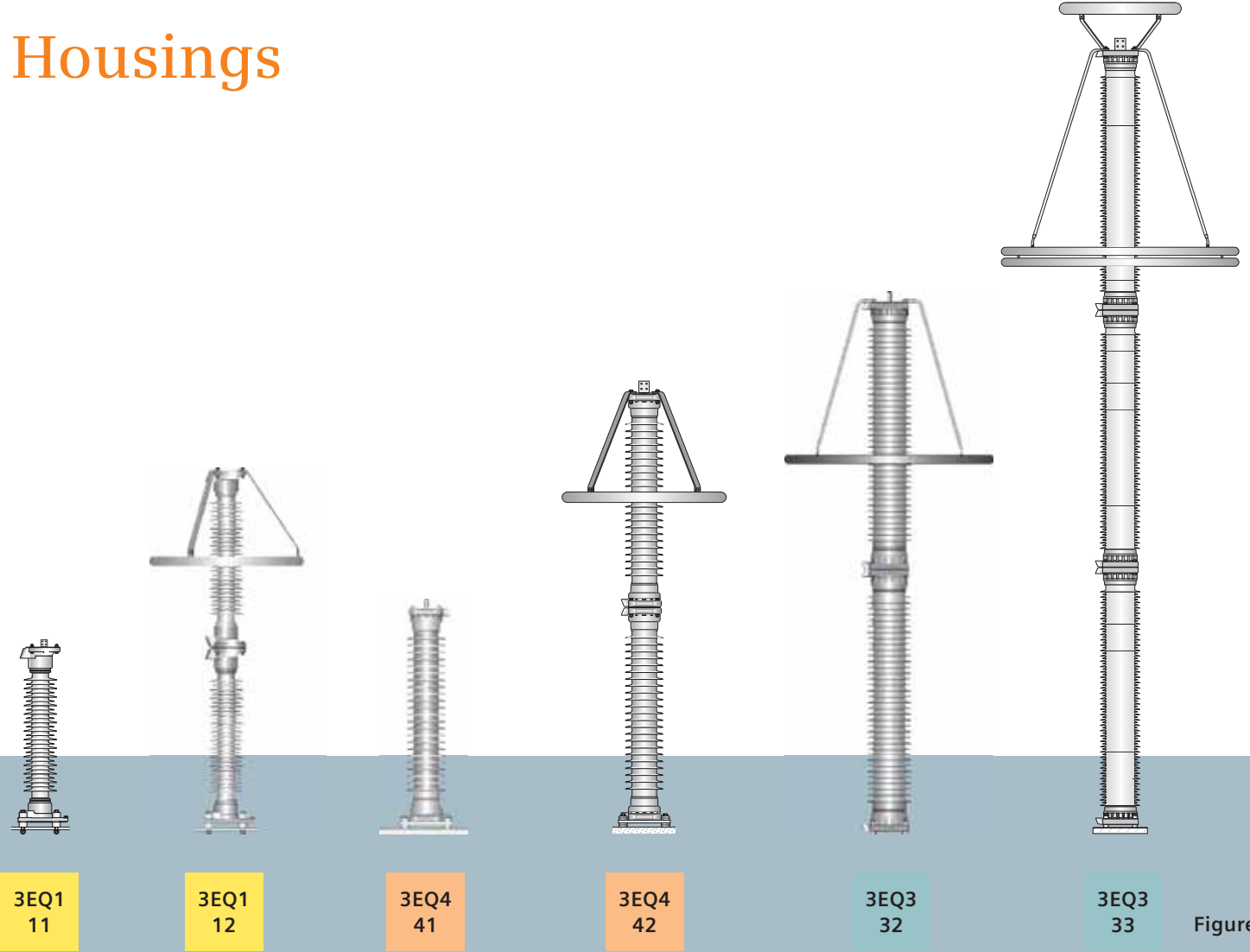


Highest voltage for equipment	Standard lightning impulse withstand voltage	Rated voltage	Continuous operating voltage	Line discharge class	Long duration current 2 ms	Maximum values of the residual voltages at discharge currents of the following impulses						Arrester type						
U <sub>m</sub> [kV]	BIL min [kV]	U <sub>r</sub> [kV]	U <sub>c</sub> [kV]	LD-CI	[A]	8/20 μs 5 kA [kV]	8/20 μs 10 kA [kV]	8/20 μs 20 kA [kV]	30/60 μs 0.5 kA [kV]	30/60 μs 1 kA [kV]	30/60 μs 2 kA [kV]							
245	850	192	154	2	500	473	509	570	392	407	427	3EQ1	192	–	1	P	J	2 2 –
	850	192	154	2	850	415	442	490	353	362	380	3EQ1	192	–	2	P	J	2 2 –
	850	192	154	3	850	433	461	511	369	378	396	3EQ1	192	–	2	P	J	3 2 –
	850	192	154	3	850	433	461	511	369	378	396	3EQ4	192	–	2	P	R	3 1 –
	850	192	154	4	1200	424	451	496	366	375	393	3EQ4	192	–	3	P	R	4 1 –
	850	198	158	2	500	488	525	588	404	420	441	3EQ1	198	–	1	P	J	2 2 –
	850	198	158	2	850	428	455	505	364	373	392	3EQ1	198	–	2	P	J	2 2 –
	850	198	158	3	850	447	475	527	380	390	409	3EQ1	198	–	2	P	J	3 2 –
	850	198	158	3	850	447	475	527	380	390	409	3EQ4	198	–	2	P	R	3 1 –
	850	198	158	4	1200	437	465	512	377	386	405	3EQ4	198	–	3	P	R	4 1 –
	850	228	182	3	850	514	547	607	438	449	471	3EQ1	228	–	2	P	J	3 2 –
	850	228	182	3	850	514	547	607	438	449	471	3EQ4	228	–	2	P	V	3 1 –
Neutral-ground arresters U <sub>m</sub> [kV]																		
245	850	102	82	2	500	251	270	303	208	216	227	3EQ1	102	–	1	S	J	2 1 –
300	850	228	182	2	500	562	604	677	465	483	508	3EQ1	228	–	1	P	P	2 2 –
	850	228	182	2	850	493	524	582	420	430	451	3EQ1	228	–	2	P	P	2 2 –
	850	228	182	3	850	514	547	607	438	449	471	3EQ1	228	–	2	P	P	3 2 –
	850	228	182	3	850	514	547	607	438	449	471	3EQ4	228	–	2	P	V	3 1 –
	850	228	182	4	1200	504	536	589	434	445	466	3EQ4	228	–	3	P	V	4 1 –
	950	240	192	2	500	592	636	712	490	509	534	3EQ1	240	–	1	P	P	2 2 –
	850	240	192	2	850	519	552	613	442	453	475	3EQ1	240	–	2	P	P	2 2 –
	850	240	192	3	850	541	576	639	461	472	495	3EQ1	240	–	2	P	P	3 2 –
	850	240	192	3	850	541	576	639	461	472	495	3EQ4	240	–	2	P	V	3 1 –
	850	240	192	4	1200	530	564	620	457	468	491	3EQ4	240	–	3	P	V	4 1 –
Neutral-ground arresters U <sub>m</sub> [kV]																		
300	850	120	96	2	500	296	318	356	245	254	267	3EQ1	120	–	1	S	J	2 1 –
362	950	276	220	3	850	623	662	735	530	543	570	3EQ4	276	–	2	P	N	3 2 –
	950	276	220	4	1200	610	649	713	526	538	564	3EQ4	276	–	3	P	N	4 2 –
	1050	288	230	3	850	650	691	767	553	567	594	3EQ4	288	–	2	P	N	3 2 –
	1050	288	230	4	1200	636	677	744	548	562	589	3EQ4	288	–	3	P	N	4 2 –
	1175	360	288	2	850	778	828	919	662	679	712	3EQ4	360	–	2	P	N	2 2 –
Neutral-ground arresters U <sub>m</sub> [kV]																		
362	950	147	117	3	850	332	353	392	282	289	303	3EQ1	147	–	2	S	P	3 1 –
420	1175	336	268	3	850	758	806	895	645	661	694	3EQ4	336	–	2	P	R	3 2 –
	1175	336	268	4	1200	742	790	869	640	656	687	3EQ4	336	–	3	P	R	4 2 –
	1175	336	268	5	1600	734	773	842	634	657	680	3EQ4	336	–	4	P	R	5 2 –
	1175	336	268	5	1600	734	773	842	634	657	680	3EQ3	336	–	4	P	M	5 2 –
	1300	360	288	3	850	812	864	959	691	708	743	3EQ4	360	–	2	P	R	3 2 –
	1300	360	288	4	1200	795	846	931	685	702	736	3EQ4	360	–	3	P	R	4 2 –
	1175	360	288	5	1600	787	828	903	679	704	729	3EQ4	360	–	4	P	R	5 2 –
	1175	360	288	5	1600	787	828	903	679	704	729	3EQ3	360	–	4	P	N	5 2 –
Neutral-ground arresters U <sub>m</sub> [kV]																		
420	1175	168	134	3	850	379	403	448	323	331	347	3EQ1	168	–	2	S	S	3 1 –
550	1300	396	316	5	1600	865	911	993	747	774	802	3EQ4	396	–	4	P	V	5 2 –
	1300	396	316	5	2100	839	883	954	742	760	786	3EQ4	396	–	5	P	V	5 2 –
	1300	399	319	5	1600	872	918	1000	753	780	808	3EQ4	399	–	4	P	V	5 2 –
	1300	399	319	5	2100	845	890	961	747	765	792	3EQ4	399	–	5	P	V	5 2 –
	1425	420	336	5	1600	918	966	1053	792	821	850	3EQ4	420	–	4	P	V	5 2 –
	1425	420	336	5	2100	890	937	1011	787	806	834	3EQ4	420	–	5	P	V	5 2 –
	1425	420	336	5	2100	890	937	1011	787	806	834	3EQ3	420	–	5	P	S	5 2 –
	1550	444	355	5	1600	970	1021	1113	837	868	899	3EQ4	444	–	4	P	V	5 2 –
	1550	444	355	5	1600	970	1021	1113	837	868	899	3EQ3	444	–	4	P	T	5 2 –
	1425	444	355	5	2100	941	990	1069	832	852	881	3EQ4	444	–	5	P	V	5 2 –
	1425	444	355	5	2100	941	990	1069	832	852	881	3EQ3	444	–	5	P	T	5 2 –
	1800	570	456	5	2100	1208	1271	1373	1068	1093	1131	3EQ3	570	–	5	P	S	5 3 –
800	1950	588	470	5	2100	1246	1311	1416	1101	1128	1167	3EQ3	588	–	5	P	T	5 3 –
	1950	597	477	5	2100	1265	1331	1438	1118	1145	1185	3EQ3	597	–	5	P	T	5 3 –
	1950	612	489	5	2100	1297	1365	1474	1146	1174	1215	3EQ3	612	–	5	P	U	5 3 –

1) According to IEC 60099-4 these values are measured on individual housing unit

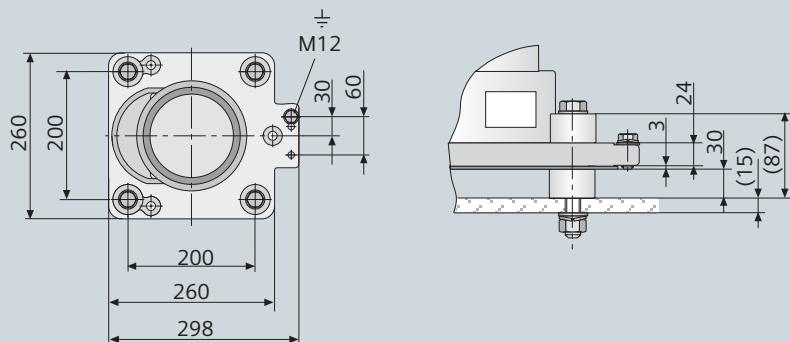
	Height [H]	Number of units	Housing insulation		Creepage distance	Top load dynamic	Grading ring diameter [D]	Weight	TOV Diagram	Figure
	[mm]		Lightning impulse withstand voltage 1.2/50 $\mu$ s <sup>1)</sup> [kV]	Power frequency withstand voltage 1 min., wet <sup>1)</sup> [kV]	[mm]	[N]	[mm]	[kg]		
4 xxx	2470	2	1102	513	6780	2400	800	64	2	12
4 xxx	2470	2	1102	513	6780	2400	800	71	3	12
4 xxx	2470	2	1102	513	6780	2400	800	72	2	12
4 xxx	2060	1	806	375	6210	10200	800	109	2	41
4 xxx	2060	1	806	375	6210	10200	800	119	2	41
4 xxx	2470	2	1102	513	6780	2400	800	65	2	12
4 xxx	2470	2	1102	513	6780	2400	800	72	3	12
4 xxx	2470	2	1102	513	6780	2400	800	72	2	12
4 xxx	2060	1	806	375	6210	10200	800	110	2	41
4 xxx	2060	1	806	375	6210	10200	800	120	2	41
4 xxx	2470	2	1102	513	6780	2400	800	76	2	12
4 xxx	2460	1	1035	482	7715	8500	800	118	2	41
4 xxx	1235	1	551	257	3390	4900	–	33	2	12
4 xxx	2970	2	1392	1008	8660	2000	1000	77	2	12
4 xxx	2970	2	1392	1008	8660	2000	1000	85	3	12
4 xxx	2970	2	1392	1008	8660	2000	1000	86	2	12
4 xxx	2460	1	1035	750	7715	8500	800	118	2	41
4 xxx	2460	1	1035	750	7715	8500	800	130	2	41
4 xxx	2970	2	1392	1008	8660	2000	1000	79	2	12
4 xxx	2970	2	1392	1008	8660	2000	1000	86	3	12
4 xxx	2970	2	1392	1008	8660	2000	1000	88	2	12
4 xxx	2460	1	1035	750	7715	8500	800	119	2	41
4 xxx	2460	1	1035	750	7715	8500	800	132	2	41
4 xxx	1235	1	551	399	3390	4900	0	34	2	11
4 xxx	3520	2	1624	1176	10170	6000	1200	175	2	42
4 xxx	3520	2	1624	1176	10170	6000	1200	189	2	42
4 xxx	3520	2	1624	1176	10170	6000	1200	176	2	42
4 xxx	3520	2	1624	1176	10170	6000	1200	191	2	42
4 xxx	3520	2	1624	1176	10170	6000	1200	183	3	42
4 xxx	1485	1	696	504	4330	4000	0	45	2	11
4 xxx	4120	2	1612	1168	12420	5100	1500	191	2	42
4 xxx	4120	2	1612	1168	12420	5100	1500	210	2	42
4 xxx	4120	2	1612	1168	12420	5100	1500	227	2	42
4 xxx	3600	2	1682	1218	10540	11700	1200	279	2	32
4 xxx	4120	2	1612	1168	12420	5100	1500	194	2	42
4 xxx	4120	2	1612	1168	12420	5100	1500	214	2	42
4 xxx	4120	2	1612	1168	12420	5100	1500	234	2	42
4 xxx	3800	2	1798	1302	11300	11100	1200	292	2	32
4 xxx	1635	1	783	567	4895	3700	0	50	2	11
4 xxx	4920	2	2071	1499	15430	4300	1800	251	2	42
4 xxx	4920	2	2071	1499	15430	4300	1800	311	2	42
4 xxx	4920	2	2071	1499	15430	4300	1800	251	2	42
4 xxx	4920	2	2071	1499	15430	4300	1800	311	2	42
4 xxx	4920	2	2071	1499	15430	4300	1800	256	2	42
4 xxx	4920	2	2071	1499	15430	4300	1800	319	2	42
4 xxx	4600	2	1891	1369	14300	9100	1800	386	2	32
4 xxx	4920	2	2071	1499	15430	4300	1800	263	2	42
4 xxx	4800	2	2007	1453	15060	8800	1800	333	2	32
4 xxx	4920	2	2071	1499	15430	4300	1800	327	2	42
4 xxx	4800	2	2007	1453	15060	8800	1800	397	2	32
4 xxx	6900	3	2836	2054	21450	6100	2200	557	2	33
4 xxx	7200	3	3010	2180	22590	5800	2200	571	2	33
4 xxx	7200	3	3010	2180	22590	5800	2200	577	2	33
4 xxx	7500	3	3184	2306	23700	5600	2650	592	2	33

# Housings

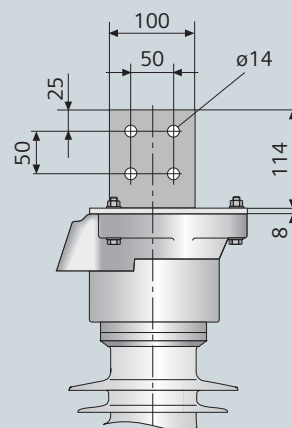




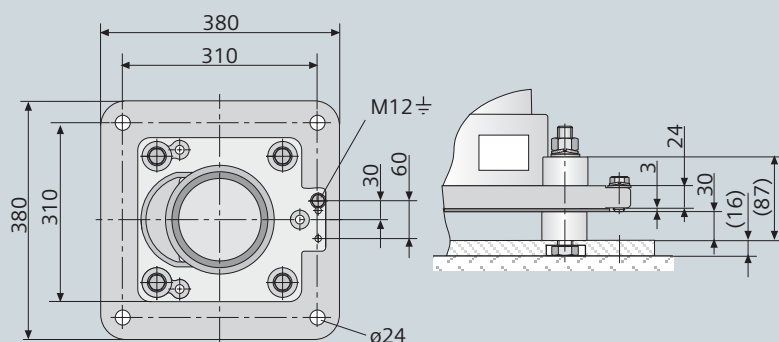
## Installation and Grounding 3EQ1



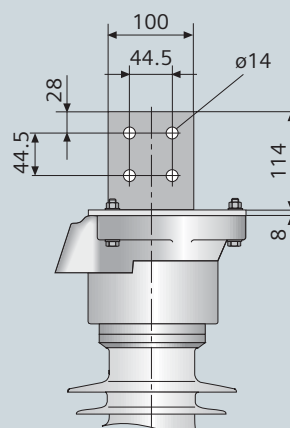
4 mounting holes 200 x 200 mm for insulated installation



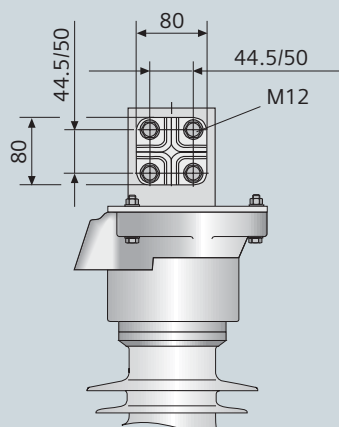
DIN flat terminal



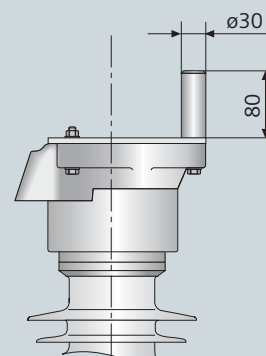
4 mounting holes 310 x 310 mm for insulated installation



NEMA flat terminal



Additional cable clamp for flat terminal



Bolt terminal

# Control Devices for Surge Arresters

These control devices can be connected to all shown surge arresters in this catalogue.



**Arrester condition indicator**  
The arrester condition indicator (ACI) shows the arrester status at a glance. Its easy-to-understand “traffic light” visualisation is based on a 3rd-harmonic-evaluation of the leakage current.

Order number: 3EX5070

**Control spark gap**  
To estimate the current that flows through the surge arrester in case of an over voltage and to count the surges

Order number: 3EX6040

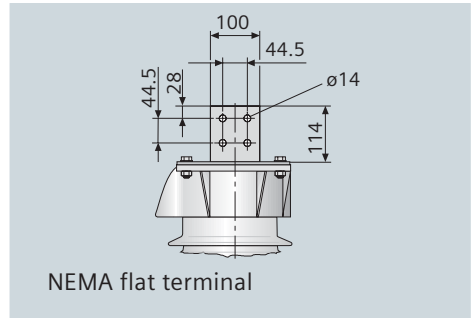
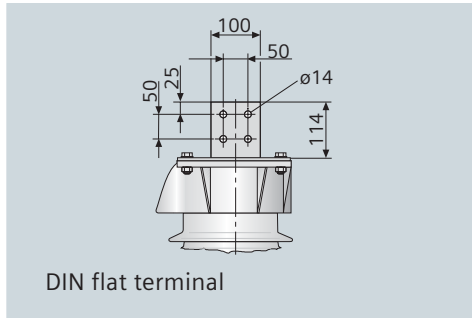
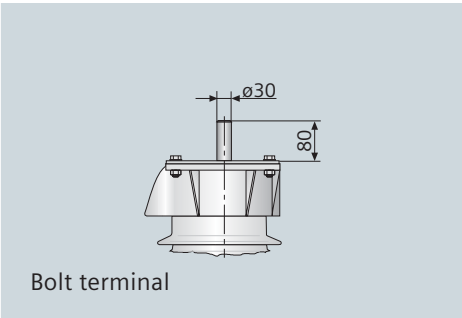
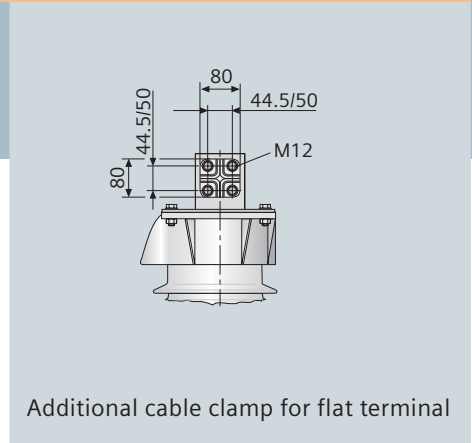
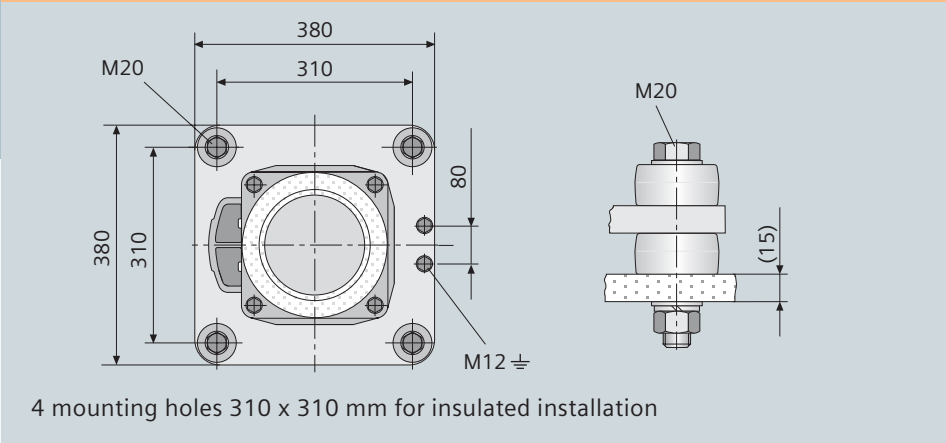
**Surge counter**

Order number: 3EX5030

**Surge counter with leakage current meter**

Order number: 3EX5050

## Installation and Grounding 3EQ4





Sensor — Up to 200 m — Display

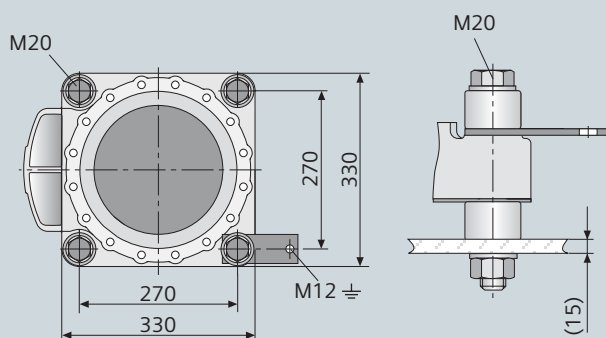
**Surge counter**  
with leakage current meter remote indication

**LCM II**  
System for live condition check  
of metal oxide surge arresters

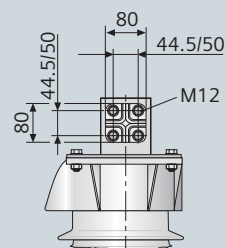
Order number: 3EX5060

Order number: 3EX5062

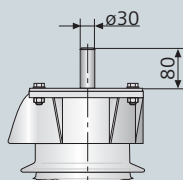
### Installation and Grounding 3EQ3



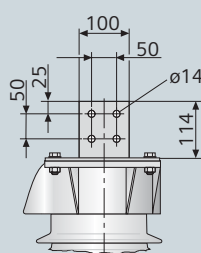
4 mounting holes 270 x 270 mm for insulated installation



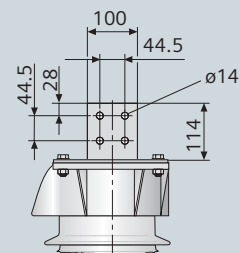
Additional cable clamp  
for flat terminal



Bolt terminal



DIN flat terminal



NEMA flat terminal

Table 3: Example

Order number		(for example)	3	E	Q	1	120	–	2	P	F	3	1	–	4	D	A	1
Silicone rubber housed surge arrester tube design		(for example)	3	E	Q													
Surge arrester model																		
Bending moment 6 kNm						1												
Bending moment 21 or 38 kNm						4												
Bending moment 42 or 72 kNm						3												
Rated voltage in kV		(for example)					120											
Long duration current																		
500 A										1								
850 A										2								
1200 A										3								
1600 A										4								
2100 A										5								
Application																		
Phase surge arrester										P								
Neutral point surge arrester										S								
Housing size of single unit											F							
Line discharge class (for example)																		
LD 1												1						
LD 2												2						
LD 3												3						
LD 4												4						
LD 5												5						
LD 5+/2 columns												6						
LD 5+/3 columns												7						
LD 5+/4 columns												8						
Number of units																		
1 unit													1					
2 units													2					
3 units													3					
Form of sheds and colour																		
Alternating sheds, grey															4			
High-voltage terminal																		
Metal plate (connection with cable eye)																	A	
Bolt 30 mm diameter, 70 mm long																	B	
Bolt 30 mm diameter, 80 mm long																	C	
Bolt 30 mm diameter, 80 mm long																	D	
Bolt 30 mm diameter, 100 mm long																	E	
Bolt 35/36 mm diameter, 80 mm long																	F	
Bolt 40 mm diameter, 80 mm long																	G	
Bolt 40 mm diameter, 100 mm long																	H	
Bolt 40 mm diameter, 120 mm long																	J	
DIN flat 100 mm x 100 mm																	K	
DIN Flat 100 mm x 100 mm																	L	
DIN Flat 200 mm x 100 mm																	M	
NEMA Flat 100 mm x 100 mm																	N	
NEMA Flat 100 mm x 100 mm																	S	
NEMA Flat 100 mm x 100 mm																	U	
DIN Flat																	V	
NEMA Flat																	W	
Special																	Z	
Name plate																		
German/Englisch (standard)																	A	
French																	B	
Czech																	C	
Slovene																	D	
Russian																	E	
Spanish																	F	
Portuguese																	G	
IEEE																	H	
Brazil																	T	
Special																	Z	
Mounting																		
4 hole Not insulated (3EQ1/3)																		0
4 hole Insulated (Standard)																		1
4 hole insulated, 310 mm x 310 mm, M20 (3EQ1)																		3
4 hole 10" not insulated (3EQ1/4)																		5
4 hole 16.5" not insulated (3EQ3/4)																		6
4 hole 10" insulated (3EQ1/4)																		7
4 hole 16.5" insulated (3EQ3/4)																		8

Not all combinations are possible.

The top row in table 3 shows an example of the build-up of our order numbers. The items in dark grey are customer specific variables.

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Power Transmission  
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High Voltage Division (PTD H51)  
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13629 Berlin  
Germany

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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.